

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Shinichi Kawasaki et al.

Application No.: 10/500,317

Confirmation No.: 9863

Filed: June 28, 2004

Art Unit: 1792

For: PLASMA FILM FORMING SYSTEM

Examiner: R. Zervigon

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In the Final Office Action (“FOA”) dated February 8, 2010, claims 60-69 of the present application were rejected under 35 U.S.C. § 102(a) as being anticipated by, and 103(a) as being unpatentable over, Japanese Patent Application Publication No. 2002-158219 (“Shimonishi”). Applicant respectfully asserts that the Examiner has failed to establish a prima facie case of anticipation under 35 U.S.C. §102(a), or obviousness under 35 U.S.C. §103(a) and, thus, improperly maintained the rejections.

Rejections under 35 U.S.C. § 102/103

Claim 60 requires, in part, “a side of the first internal space nearer to the second electrode body in the arranging direction and both the upstream and the downstream sides of the first internal space in the passage direction being surrounded by the first case body and a remaining side of the first internal space farther from the second electrode body in the arranging direction being opened to an outside and provided as the first opening.”

The Examiner asserts that element 2’ of Shimonishi reads on the first case body of the claimed invention, and that there is a first opening in the plane of the page in Fig. 1 of Shimonishi. However, the claimed invention requires that a side of the first case body *in the arranging direction farther from the second electrode* be open. The plane of the page in Fig. 1 of Shimonishi is clearly not in the arranging direction but, instead, is in the longitudinal

direction. In the arranging direction, which is left-right in Fig. 1 of Shimonishi, element 2' is *closed on both sides*.

In fact, Shimonishi teaches away from the above features of claim 60. Shimonishi teaches a multiple row-type plasma processing apparatus having three or more electrodes and two or more discharge spaces (See paragraph [0011] and Figs. 1 and 2 of Shimonishi). Each of the electrodes 1, 1', 1'' is covered by a solid dielectric bodies 2, 2', 2'' for preventing generation of arc discharge (See paragraph [0036] of Shimonishi). If a side of the first case body 2' farther from the second electrode body 1, 1'' in the arranging direction is opened and provided as the first opening, arc discharge will occur between the first electrode body 1' and the second electrode body 1, 1'' through the first opening. Thus, Shimonishi not only fails to show or suggest at least the above limitations of claim 60, but also, actually *teaches away* from them.

In the FOA, the Examiner asserts that "the Examiner believes that the claimed apparatus relative to the 'arranging direction' is not as 'clear' as Applicant may believe. Shimonishi's above described arranging direction is still believed to be the broadest reasonable interpretation [sic]." However, Claim 60 explicitly defines *three perpendicular directions*, and defines the apparatus *with respect to the three directions*. The claim explicitly defines the "passage direction" as a direction in which the processing gas is passed, the "longitudinal direction" as a direction in which the first electrode body is longer than in the passage direction, and requires that the "arranging direction" be perpendicular to the longitudinal and passage directions. Furthermore, the claim requires that the second electrode body is arranged in parallel with the first electrode body in the arranging direction. Thus, the arranging direction of Shimonishi *must necessarily* be the left-right direction in Figs. 1 and 2, because that is the *only* direction in which electrodes are arranged in parallel. Accordingly, the Examiner's above assertion is clearly unreasonable and wholly unsupported by the actual teachings of the reference.

Additionally, claim 60 requires, in part, "an end part on a side of said first opening of a portion of said first case body on the downstream side of the first internal space being protruded in said one remaining side farther from the second electrode body in the arranging direction relative to said first electrode body."

As shown in Fig. 28, a marked-up version of which was reproduced in part in the last reply, a side of the first case body on the downstream side (down in the figure) has an end part that protrudes in the arranging direction away from the second electrode body (left in the figure). The claimed protruded end part creates an advantage and unexpected effect of attenuating

creeping discharge from the first electrode body. This is because the protruded end part increases the creeping distance, bends the creeping channel, and helps prevent the creeping discharge from falling on the object to be processed.

As shown in the figure, the creeping discharge generates on a downstream side surface (2) and, specifically, on the corner (3) of the first electrode body where the rear surface (1) and the downstream side surface (2) cross. The creeping discharge on the downstream side surface (2) is prevented from running directly to the object to be processed by the downstream portion of the first case body on the downstream side of the first internal space. The creeping discharge on the corner (3) is prevented from running directly on the object to be processed by the protruded end part of the downstream portion of the first case body.

Moreover, the protruded end part can also suppress generation of the creeping discharge at the corner (3) because of release of electric field concentration at the corner (3). The creeping discharge creeps along the protruded end part not only away from the first electrode body, but also, farther away from the second electrode body. Significant attenuation of the creeping discharge can thus be achieved.

Additionally, the creeping discharge is required to turn along the protruded end part in order to reach the object to be processed. The required turn provides additional significant attenuation of the creeping discharge so that the creeping discharge falling on the object is greatly reduced. Thus, even when creeping discharge is generated by the first electrode body, the creeping discharge falling on the object to be processed can be minimized, thereby reducing damage on the object to be processed.

As the Examiner admits in lines 12-17 on page 9 of the pending Office Action that Shimonishi *does not show or suggest* an end part on any of the case bodies 2, 2', 2" that protrudes in the arranging direction, *i.e.*, left-right direction in Fig. 1. Thus, the Examiner *explicitly admits* that Shimonishi fails to teach at least the above limitations of claim 60.

The Examiner further asserts that "[a]lthough Applicant has provided statements of unexpected results and criticality, the Examiner still believes that even this end part or flange falls within the Examiner's dimensional arguments for maintaining the rejection under 103." However, by providing support for criticality and unexpected results, Appellant has rebutted the Examiner's assertion that the limitation is mere dimensional optimization. Moreover, the conclusory statement made in the FOA fails to put forth any evidence supporting the Examiner's position. Although the Examiner asserts that the limitation is "a standard flange component,"

not a single prior art reference showing the limitation has yet been cited. Thus, the Examiner's assertion is unreasonable and wholly unsupported by the actual teachings of the reference.

The key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. The Supreme Court in *KSR International Co. v. Teleflex Inc.*, 82 USPQ2d 1385, 1396 (2007) noted that the analysis supporting a rejection under 35 U.S.C. 103 should be made explicit. The Federal Circuit has stated that "rejections on obviousness cannot be sustained with mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006). See also *KSR*, 82 USPQ2d at 1396 (quoting Federal Circuit statement with approval). In view of the above, the Examiner's maintenance of the rejections of claim 60 is unreasonable. Dependent claims are patentable for at least the same reasons.

Claim 61 requires, in part, "an elongate lid made of a solid dielectric material for closing said first opening," and "an end part on the downstream side of said lid covering an end surface of said protruded end part in a location more forward in said one remaining side farther from the second electrode body in the arranging direction from said first electrode body."

The additional structures of claim 61 make it difficult for the creeping discharge to reach the joint between the end surface of the protruded end part of the first case body and the end part of the lid on the downstream side, thus helping prevent leakage of the creeping discharge outside through the joint. Shimonishi clearly *does not show or suggest* the claimed lid closing a first opening. Thus, Shimonishi also fails to teach at least the above limitations of claim 61.

Claim 62 requires, in part, "an opposite side of the second internal space farther from the first electrode body in the arranging direction being opened and provided as the second opening," and "an end part on a side of said second opening of a portion of said second case body on the downstream side of the second internal space being protruded in said opposite side farther from the first electrode body in said arranging direction relative to said second electrode body."

The claimed protruded end part creates an advantage and unexpected effect of attenuating creeping discharge from the second electrode body. This is because the protruded end part increases the creeping distance, bends the creeping channel, and helps prevent the creeping discharge from falling on the object to be processed. Furthermore, there is an additional advantage and unexpected effect that the creeping discharge from the first case body

and the creeping discharge from the second case body can be prevented from communicating with each other at the downstream side of the case bodies near the object, because the first and second case bodies are opened to opposite sides from each other in the arranging direction.

As the Examiner admits in lines 4-14 on page 10 of the Office Action, Shimonishi *fails to show or suggest* the above limitations of claim 62. Because, as explained above, the above limitations create an advantage and unexpected effect, the limitations are not mere optimizations of dimensions. Thus, Shimonishi also fails to teach at least the above limitations of claim 62.

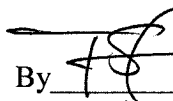
Claim 69 further requires, in part, "said first dielectric case body is provided with a gas uniformizing passage for dispersing said processing gas uniformly in said longitudinal direction and for introducing said processing gas into said gas passage."

As the Examiner admits in lines 15-19 on page 10 of the Office Action, Shimonishi *fails to show or suggest* the above limitations of claim 69. In fact, Shimonishi discloses a gas uniformizing passage for dispersing the processing gas uniformly in the longitudinal direction and for introducing the processing gas into the gas passage, as shown in Fig. 4 of Shimonishi. Thus, Shimonishi fails to show or suggest a first dielectric case body is provided with *the* gas uniformizing passage. Thus, Shimonishi also fails to teach at least the above limitations of claim 69.

In view of the above, the Examiner has improperly maintained the 35 U.S.C. §102/§103 rejections. Accordingly, a favorable decision from the panel is respectfully requested. Please apply any charges not covered, or any credits, to Deposit Account 50-0591 (Reference Number 12088/019001).

Dated: April 7, 2010

Respectfully submitted,

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